Can the market be tamed? A thought experiment on the value(s) of planning

Abstract

In many contexts across the globe the scope and remit of planning is being limited. Much of the academic literature identifies this tendency as arising from a tension between planning as a state-regulatory activity and the tenets of neoliberalism – particularly free market competition. In this essay we seek to explore the degree to which this perceived incompatibility between planning and the neoliberal order is genuinely real by running a thought experiment. We hope to show that thinking about the development process in this way points to alternative ways of imagining the scope and remit of planning – and how the normative principles at the core of the activity might be reconciled, or even extended, within the context of a neoliberal polity.

Introduction

In many contexts across the globe the scope and remit of urban and environmental planning is being limited (Gunder, 2016; Gunn and Hillier, 2012; Hrelja, 2011; Holman, Mossa and Pani, 2017; Mäntysalo and Saglie, 2010; MacCullum and Hopkins, 2011). As an activity that has statutory regulation at its core it often grates against the now more or less fixed neoliberal orthodoxy that posits the market as locomotive of progress against bureaucracy as a brake on development (Brenner and Theodore, 2005; Fisher and Gilbert, 2013; Jones, 2012). Although the specific anatomy of the neoliberal order varies from nation to nation some core similarities

have been catalogued and planning's corresponding incompatibility with these principles identified (for example, Lovering, 2009).

For some academics interested in making the case in favor of planning, corresponding attempts to diminish the professional activity to make way for the market have been understood as an 'attack' (Lord and Tewdwr-Jones, 2014). Others have highlighted the continuing public interest justification that spawned planning in the first place (Campbell, 2012). In some cases (Campbell and Fainstein, 2012) the defence of planning, quite correctly, points out that the environment (widely construed) is a very complex asset that is not well captured by those analyses of planning that categorise it as a restrictive drag on economic growth (Cheshire and Sheppard, 2005; Nathan and Overman, 2011). This point has been extended by research that has sought to investigate much more fully planning's specific 'added value' (Adams and Watkins, 2014; Adams and Tiesdell, 2010). The net result of work in this vein has been to challenge the logic that real estate markets would respond effectively to market signals if it was not for the planning system. Correspondingly, the argument has emerged that there may be value in thinking of planning as a 'market maker' (Lord and O'Brien, 2017) and that planning may be conceived as an important foil to the neoliberal hegemony rather than explicitly incompatible with it.

But what would this type of planning look like? Could we imagine ways in which a modernised planning might combine these 'market making' aspects with its normative ends and professional ethics: the public interest, social inclusion, environmental sustainability, balanced development?

An important strain in the literature would suggest not. A sustained body of work has emerged on the incompatibility of planning's social and environmental goals with the core attributes of neoliberal capitalism. The result is that an earlier proposed 'sustainability fix' (While, Jonas and Gibbs, 2004) has, following thoroughgoing empirical investigation, given way to scepticism that

a balance can be struck (Bina, 2013; Georgeson, Caprotti and Bailey, 2014; Gibbs and O'Neil, 2014; Krueger and Gibbs, 2007; O'Neil and Gibbs, 2016). For an area of public policy which is charged with precisely this task of taming the market, this question is particularly germane to planning. Although rarely confronted explicitly in the planning literature some, such as Campbell, Tait and Watkins' (2014), have posed the question directly: "Is there space for better planning in a neoliberal world?" (see also, Legacy, Lowe and Cole-Hawthorne, 2016). At one remove Holman, Mossa and Pani's (2017) work has made a significant contribution through an exploration of the empirics of this question by looking at planning reform in England to explore the points of convergence and divergence between planning's economic and ethical value(s).

In this paper we hope to further this debate by exploring from first principles the relationship between how planning systems function at a human level and the outcomes they might entail. In this respect our aim is to advance the literature on planning's capacity to effect meaningful change in business decision making by exploring the intersection of "how real estate developers think" (Brown, 2015) and how they might act and, correspondingly, any influence planning might have in this regard. In this respect our contribution is to the nascent work that seeks to develop a 'behavioral insights' take on planning (Bond et al., 2016; Ferrari et al., 2011; Jackson and Watkins, 2008; Lord, 2009, 2012).

The development process: rationality, belief and human behviour

There is now a huge corpus of research on the development process, much of it inspired by various branches of economics. Perhaps the best example of this crossover comes in the shape of transaction cost approaches that seek to understand the development process through the

66 lens provided by the New Institutional Economics (Alexander, 1992, 2001; Lai, Ngar Ng and
67 Yung, 2008; Webster, 2005). For adherents this framework provides a persuasive way of reading
68 off outcomes from the governance arrangements and the interaction of the prevailing set of
69 institutions (widely construed to include formal codes and informal norms of practice) that exist
70 in a particular context. However, its *post-hoc* vantage point and the primacy accorded to the rules
71 and institutional players of the game - as opposed to the *interpretation* of those rules that result in
72 the human behaviors of those who people the institutions (or act individually) – have meant that
73 not all are convinced. Fischer's (1977:322) early unease remains relevant: "Transaction costs
74 have a well-deserved bad name as a theoretical device, because solutions to problems involving
75 transaction costs are often sensitive to the assumed form of the costs, and because there is a
76 suspicion that almost anything can be rationalized by invoking suitably specified transaction
77 costs."

78 In response some researchers have turned to game theory. Perhaps the fundamental motivating
79 factor encouraging the infusion of this school of economic thought into planning research is the
80 recognition that the markets that planning regulates are really quite peculiar. The development
81 process, irrespective of contextual setting, is overlaid with specific qualitative features that speak
82 very closely to the questions with which game theory (and behavioral economics) deal: the
83 decision making process pits hypothetical development against unpriced public goods, usually
84 environmental assets; buyers and sellers may take a very long time to negotiate a mutually
85 agreeable settlement; the decision to develop is (almost always) irreversible and creates landscape
86 altering externalities that cast a decades-long shadow; and the issue of local democratic control is
87 a relevant consideration in many settings. These observations alone point to the limitations of
88 econometric estimations of planning's costs devoid of any corrective for the effect the activity

89 has on the *quality* of market conditions or the things it achieves that lie outside the parameters of
90 any given model.

91 In those cases where game theory has been applied to planning-orientated questions the focus
92 has usually been on the specific microeconomics of urban transformation, particularly questions
93 of land readjustment and compensation policy (Samsura, van der Krabben and van Deemen,
94 2010, 2015). At one remove, others have shown the utility of using concepts from game theory
95 to think about the dissemination of information and how this affects the strategies employed by
96 all those who have any conceivable role in the development process (Kaza and Hopkins, 2009).
97 The shared underlying logic of research in this vein suggests a fundamentally altered way of
98 thinking about the economics of land-use planning more widely.

99 Alternative approaches to thinking about the development process have encompassed the use of
100 'big data' and econometric methods to simulate (aspects of) the production of the built
101 environment (Brotchie, Sharpe and Toakley, 1973; Gómez-Antonio and Hortas-Rico, 2016;
102 Jiang, Deng and Seto, 2013; Reades, 2014), systems- and complexity theory-inspired approaches
103 (Chadwick, 1978; Hillier, de Roo and van Wezemael, 2016) and others that single out variations
104 in agential power and the chronology of the process as holding explanatory power (Farías and
105 Bender, 2010; Gar-On Yeh and Wu, 1996; Landis, 1995; Yigitcanlar and Teriman, 2015). At
106 the intersection of these contributions sits an array or research which combines insights from
107 consonant approaches - such as agent-based modelling (ABM), which seeks to marry the impulse
108 to simulate with an appreciation of human agency (Batty, 2005). The promise of this approach is
109 yet to be fully realized as the application of agent-based modelling to the development process is
110 in its infancy (Baptista et al., 2016; Levy, Martens and van der Heijden, 2016).

111 There are exciting developments in, and at the confluence of, all these approaches. However,
112 although the various ways of thinking about the development process sketched out above offer
113 rich insights into the specifics of the development process from place to place we lack a
114 thoroughgoing epistemological framework that would allow us to make part-whole connections
115 across the, often, case-based empirical literature. Indeed, perhaps the single most important
116 overriding message that emerges from the literature as a whole is that it makes little sense to talk
117 of *the* development process when there are such huge variations between contexts: for example,
118 the discretionary system of the UK, US zoning arrangements and Chinese statutory orchestration
119 are systemically very distinct with huge variations in both legal framework and norms of practice.
120 This point is well made in the classic statements of planning as a context-specific activity
121 comprising multi-agent negotiations (and other communicative acts) (Forester, 1999; Healey,
122 1997). Therefore, to develop any kind of theoretically nuanced understanding of the
123 development process that prevails in any particular context means engaging with the human
124 psychology of decision making.

125 This presents a very specific challenge in two respects. Firstly, in theoretical terms we have to be
126 able to accommodate an understanding that participants in the development process may be
127 acting on the basis of their beliefs about one another. By extension these beliefs alone may have
128 a significant bearing on individual (and collective) action and the outcomes that might result.
129 Secondly, we need to be able to translate this understanding into empirical investigation. This
130 would allow us to develop behavioral insights into the specifics of the 'planning game' that plays
131 out in any particular context.

132 In this paper we hope to address the first question: how could we theorise counterparty
133 interaction in the development process to elucidate the importance of the beliefs that each forms

about the other(s)? In so doing we hope to make the case that market intervention in the form of urban and environmental planning could have an effect on how developers think that in turn shapes how they act. We argue that this vision of planning as a market actor that regulates beliefs opens the door to imagining the sorts of planning system that could have a meaningful impact on business decision making. To do this we use the medium of a simplified thought experiment. This approach has become the principal way of thinking about the underlying philosophical question – what we can know of other minds – and can be seen in classic examples such as the 'brain in a jar' (see also, Avramides, 2001; Ryle, 1949). The thought experiment allows us to explore from first principles under what circumstances we might come to have true, justified beliefs about cognition, behavior and language in others. The specific nature of the thought experiment is a scenario – not always one that must closely mirror reality (as with the 'brain in a jar') – that provides a framing device to explore a specific question often pertaining to a fundamental principle of epistemology, metaphysics, logic or ethics. Thought experiments often take a greatly simplified or superficially contrived format to allow us to test the limits of some imagined state, for example, Hardin's original iteration of the *Tragedy of the Commons* (and developments thereupon) serve perfectly to illustrate this point (Hardin, 1968; Cole, Epstein and McGinnis, 2014; Feeny et al., 1990).

The medium of the thought experiment is well-aligned to our objectives in this paper as we seek to explore from first principles the effects of belief on the development process, how beliefs might affect outcomes and how beliefs might be shaped through regulation. As established in the foregoing discussion there cannot be said to be any singular real world with respect to the development process: there are myriad approaches taken that vary wildly from place to place. So, our aim is explicitly not to give a fine-grained rendering of how affecting beliefs might alter

how the development process might work out in any specific location. We fully acknowledge that behaviors and the beliefs that motivate them are to some extent a reflection of the rules of the game established in a particular context. Instead our aim is to consider the problem in the abstract through a simplified thought experiment that removes the issue of empirical context.

In what follows we run a thought experiment that follows the well known folk game "Going to the Party" and in structural terms begins by mirroring the traditional rendering (for example see Perea, 2012). The purpose of the thought experiment is to explore how, even in a simplified scenario involving just two participants, a range of possible outcomes can be imagined *dependent upon what each participant believes regarding the other*. Each outcome is rational and reasonable: a set of potential 'states of the world' (Rasmusen, 2006). Which set of outcomes is preferable is wholly normative and would require prescription - an answer to the separate but not unrelated question of what *should* be the underpinning goals of a system designed to mediate competing ends *vis a vis* how our environment is governed. It is our contention in this paper that it is the value - *and in the values* - of a planning system to appreciate that a range of potential outcomes are possible, that they are belief-driven and that planning has the agency to seek to manage the beliefs that shape the process towards one of these end states.

Although we have explicitly and deliberately not sought to develop a thought experiment that exactly mirrors a specific case from the material world we have started, as with all thought experiments, from some principles that we are interested in exploring. Firstly, we seek to investigate how decision makers engaged in the development process might order their preferences over a range of potential sites; secondly we seek to investigate how these preferences are affected by beliefs. More specifically, we hope to uncover how, what has long been argued to be a core, foundational feature of neoliberalism – competition (Wigger and Buch-Hansen, 2012,

2013) - might affect decision making. In this thought experiment we set out to identify how the desire to gain an advantage by diminishing competition, a central principle of business strategy (Porter, 1979; Gunther McGrath, 2013), might play out in the development process where aversion to competitive rivalry has a clearly spatial dynamic (Bulan, Mayer, Tsuriel Somerville, 2009; Xu and Yeh, 2005). Building from this we begin with three uncontroversial propositions that frame the thought experiment:

1.Developers prefer some sites to others.

2. Developers prefer to limit competition within the context of their spatial preferences (defined under 1);

3. Developers will formulate beliefs about one anothers' spatial preferences that ultimately affect 1 and 2.

The thought experiment

Imagine a city that has four vacant sites for redevelopment: A, B, C and D. A is a 'prime' location; B and C incrementally less desirable and D, a deprived inner city neighbourhood, is deemed to have the least development potential as a profitable location. There are two main real estate developers in our city run, respectively, by Mark and Cecilia. Mark has a well-defined set of preferences with respect to the development opportunities in the city: he favours Site A to

Site B; B to C and C to D; however the situation he dislikes most is when Cecilia competes with him for a site.

Mark's preferences can be set out in tabular form:

TABLE ONE ABOUT HERE

The table above simply sets out Mark's position with respect to how he ranks the desirability of acquiring each development opportunity; he derives most satisfaction from the acquisition of Site A and then transitively ranks the following three sites in descending order. However, a coincidental choice by Cecilia is the outcome he likes least: when Cecilia chooses to compete with him the desirability of that site diminishes to zero for Mark.

This ranked order of preferences (4,3,2,1,0) - utilities in the language of economics - represents Mark's satisfaction with any of the possible outcomes of site acquisition; the full range of 'states of the world' that might prevail.

All other things being equal it is clear that Mark's preferred option is Site A. This is the best choice for Mark so long as he believes that Cecilia will make any choice other than Site A. If Mark believes that Cecilia has similar tastes to himself, and that she will likely pursue Site A too, the choice of Site B would be rational as the absence of spatial competition means this will yield a better outcome (expected utility, 3) compared to one where both Mark and Cecilia make the same choice for Site A (expected utility, 0).

How about Site C? If Mark believes that Cecilia will choose Site A clearly the only rational choice for Mark is Site B. But what if he believes Cecilia has a preference for one of the other sites? The strict ordering of the utilities would mean that Mark should go with his strongest preference, Site A, the one that yields him the greatest utility (4).

Is it the case, therefore, that there are no circumstances under which Sites C or D could be a rational choice for Mark?

To this point we have worked solely on the basis that Mark is certain in his belief about what Cecilia might do. However, beliefs rarely function in this way. Instead we might believe *to a certain extent* that we can forecast what, for example, a competing property developer might do. For example, on reflection, Mark might arrive at the belief that he has a 60% expectation that Cecilia will choose Site A and a 40% probability that she will choose Site B. If Mark holds this belief about Cecilia's actions his expected utility can be summarized as a 60% chance that following his own strict preferences will result in he and Cecilia competing for the same site (Site A) the outcome of which would be totally unsatisfactory to Mark (utility, 0) and a 40% chance that Mark will succeed in obtaining Site A without having to compete with Cecilia (because she will have gone for Site B) thus realising his most preferred outcome and a utility of 4. This field of possibilities produced by Mark's beliefs could be summarized as:

$$\text{Site A: } (0.6)\ 0 + (0.4)\ 4 = 1.6$$

By extension if Mark chooses Site B he expects with probability 0.6 to have avoided competition with Cecilia and, therefore, to enjoy a utility of 3. Similarly he anticipates a 40% chance that they will have both opted for Site B, the presence of competition resulting in an expected utility of 0. Again, this could be summarized as:

243 Site B: 0.6 (3) + 0.4 (0) = 1.8

244

245 If Mark opts for Site C he expects with certainty that he will not be competing with Cecilia as he
246 expects with equivalent certainty that she will only be interested in Sites A and B. Looking again
247 at Table 1 we see that the expected utility to Mark of choosing Site C is 2: greater than the
248 expected utility resulting from his beliefs about Cecilia's preferences with respect to either Site B
249 (1.8) or Site A (1.6). Site D is still the least preferred of Mark's non-competing options with an
250 expected utility of 1. In summary, Mark now prefers C to B to A to D: a very different ranking
251 to the one he started with before we formulated his beliefs as probabilistic expected utilities. We
252 note that to make the point, we have intentionally kept the analysis as simple as possible. One
253 may, however, argue that Mark's belief have been arbitrarily specified without respecting the
254 strategic interaction between the two players, Mark and Cecilia, and the consistency between
255 beliefs and actions. To address this point, we demonstrate in the appendix to this paper that
256 Mark's belief is consistent with Cecilia's strategy and is part of a Bayesian Nash equilibrium in a
257 game where Mark is uncertain about Cecilia's preference regarding the four development sites.

258 **Interpretation**

259 This thought experiment illustrates how, even under the terms of a simplified game, rational
260 choices made by market participants under competition are a function of their beliefs about
261 others. It also illustrates how this may result in patterns of behavior that run contra to what one
262 might expect when beliefs are not considered: in the thought experiment it is Mark's beliefs
263 about Cecilia that result in his optimal choice being what would otherwise be his third most
264 preferred site.

So what should we make of this more widely? We can probably imagine scenarios where it may be in our collective societal interests that developers arrive at the conclusion that their less-preferred sites are the ones that they should pursue. This may be achieved by encouraging the necessary belief set on the part of competing developers to allow that conclusion to follow rationally. For regulatory planning this would mean helping to install within developers a belief profile consistent with the conclusion that investing in what would otherwise be their least preferred sites, often inner city neighbourhoods which have been neglected, would be the logical thing to do. This would mean a greater, not lesser, role for planning. Moreover it would mean a more economically active position for planning (Adams and Tiesdell, 2010): enhancing the desirability of C- and D-type sites by creating the perception that the right to develop might be more readily achieved over sites which, on first principles, would be more desirable to the developer but where development is less viable, because of competition and/or a diminished probability of consent. Alternatively we could potentially conceive of more fundamental ways of achieving progressive outcomes through planning working with/harnessing neoliberalism's competitive impulses. For example, bundling sites at either end of the spectrum could be arranged in such a way that the right to develop Site A was accompanied with the obligation to develop Site D. Such a strategy would be unequivocally behavioral-economic. Its outcomes might also be considered to give more socially preferable outcomes. Similar observations may be made with respect to environmentally more, over less, sustainable locations.

In the example in this paper we have simply introduced two competing players, Mark and Cecilia, without any planning agency to mediate or coordinate their activities. Such an agency, a 'market maker' for land and property, would occupy a strategically vital role. It would be able to animate markets, shape their conditions and potentially, depending upon its power, reach and the

skills of those who people it, affect the beliefs and, therefore, the decision making of developers. For example, in this thought experiment we have not considered what might be entailed if Mark and Cecilia seek to cooperate and coordinate their actions in some way. A planning agency that had the power to diminish the likelihood of this outcome and maintain competitive market conditions or manipulate them, perhaps through encouraging competition for sites A and B while diminishing the likelihood of competition for sites C and D, would have a hugely significant bearing on the perceived desirability of sites. The corresponding effect such an agency might have on limiting developers' choice sets and, critically, developers' beliefs about one another's preferences would also have profound effects on market conditions. Depending upon the ethical criteria by which such a system is held to account it could potentially privilege 'better' outcomes in a neoliberal world in which competition is reified (Campbell, Tait and Watkins, 2014).

So powerful are beliefs as a determinant of how markets function in practice that the importance of this role of market making intermediary in creating or installing beliefs can barely be overstated. If we change the utility profile of Mark's preferences to make Sites A and B more strongly favoured than Sites C and D, but leave all other aspects of the thought experiment unaltered, the implied logical course of action for Mark becomes quite different:

TABLE TWO ABOUT HERE

Now, although the strict ranking remains the same, Mark favours Site A quite a bit more strongly than any other. Under this revised set of preferences Site C can no longer be an optimal choice

for Mark. He prefers Site A sufficiently more strongly that, with the same field of beliefs as before about Cecilia, his expected utilities become:

$$\text{Site A: } (0.6)\ 0 + (0.4)\ 7 = 2.8$$

$$\text{Site B: } (0.6)\ 4 + (0.4)\ 0 = 2.4$$

The strength of Mark's preference for Site A now means that despite his belief that Cecilia also favours this site and his very strong aversion to competition with Cecilia he will favour the pursuit of this site to the others.

Extension and Conclusions

Although this is only a simplified thought experiment it serves to reveal some significant points regarding the importance of beliefs in shaping outcomes. Evidence from behavioral economics shows that if a belief is widely held and with sufficient conviction we may identify the emergence of a normalising form of behavior which results in 'herding'. This formation of a commonly held belief extends far beyond the terms of the traditional neoclassical understanding of a wholly and perennially self-interested economic decision maker. For example, a connection may be explicitly traced between social pressures and expert opinion in creating and reinforcing the instinct to herd (Baddeley, 2013): highly relevant considerations with respect to real estate transactions where social invocations to 'get on the property ladder' and mutually reinforcing expert opinions abound. Under conditions such as these the establishment of herding has been understood as a collective psychological precursor to the irrational escalation of commitment common to many bubble markets where a premium is assigned to some asset(s) as a function of the prevailing belief that it is universally understood to be highly-prized (see, for example, Roberts and Henneberry, 2007 on developers' potentially irrational preference for capital cities).

This creation of a socially normalized, limited 'worldview' (juxtaposed with the game theory understanding of multiple possible states of the world) seems to be a tendency common to humankind (Ostrom, 2014).

More widely it is far from clear that the politically most popular neoclassical analyses of how real estate markets function can be translated into realisable policy ends. For example, the view that building more residential units in areas of extreme demand, such as the New York/tri-state area or London/South East England will stabilise or lower house prices through reconciling the mismatch between undersupply and excess(ive) demand is a potentially greatly oversimplified conclusion (see Marom and Carmon, 2015 for a review of housing policy in these two specific areas). The focus on the bricks and mortar of under supply at the expense of the behavioral psychology of demand in an over-heating market is in keeping with the *ceteris paribus* assumption common to neoclassical economics. But all things are not equal. Omitting the psychology of human economic decision makers produces very partial analyses that explain little of the irrationality of some real estate market outcomes. Building many more new houses in locations where demand is strongest may do very little to lower or stabilise prices (assuming this is the true objective): not if the 'Site A' logic for, say, Greater London is sufficiently strong as a prevailing set of beliefs. We may simply build a great many very expensive new homes, probably to rather low standards - "rabbit hutches on postage stamps" (Evans, 1991) - in areas of environmental jeopardy (in this English context particularly in relation to flood risk) that remain out of reach for many/most. From this perspective the answer to resolving the affordable housing situation may require a fuller engagement with the beliefs and expectations of those who play the 'planning game' (Lord, 2012).

To carry this conclusion through to an alternative policy prescription we can return to the point at which this paper opened: the status of a planning system. Although now seemingly friendless in political circles, planning is perhaps the only viable way of animating real estate markets in such a way as to challenge or subvert the belief structures that have given rise to one of the most pressing social problem in many developed countries: urban centres of population where housing is too expensive for all but the most wealthy. To illustrate, if we could remake planning so that its enactment is cognisant of effects on real estate markets we might imagine Mark and Cecilia playing a different game, one in which planning controls created a 'state of the world' such as this:

TABLE THREE ABOUT HERE

To run the thought experiment through to its conclusion if Mark believes that Cecilia has a 50% probability of choosing Site A, a 30% preference for Site B and favours Site C to a degree of 20%, under this new set of preferences, every possible site becomes a potentially rational choice for Mark, including the otherwise least-preferred option, Site D. His expected utilities become:

Site A: (0.5) 10 = 5

Site B: (0.7) 9 = 6.3

Site C: (0.8) 8 = 6.4

Site D: (1) 7 = 7

374 The order that Mark began with has been symmetrically reversed. His optimal choice is to go
375 for the site he initially favoured least, Site D, because the fear of spatial competition with Cecilia
376 is now greater relative to a less strongly ordered set of preferences. Surely this would be the end
377 goal for any planning system: harnessing the competitive impulses of a neoliberal world to
378 encourage better outcomes for areas that would otherwise be disadvantaged? Of course in
379 practice Mark's beliefs may moderate over time. We may need to use Bayesian methods to
380 understand how he updates his beliefs in light of information he gleans from Cecilia, for
381 example, if commitment to a course of action is escalated as a result (Gilroy and Hantula, 2016).
382 Equally Cecilia may use signalling and screening strategies in an attempt to affect Mark's beliefs
383 about her. She may bluff, or double bluff; she may obfuscate; she may dissimulate and
384 prevaricate. And so may Mark (see, Benz, Jäger and van Rooij, 2016; Polnaszek and Stephens,
385 2013). We invite others to extend and develop the thought experiment such as we have done
386 here and in the Appendix to this paper.

387 With so many moving parts, even in this greatly simplified thought experiment, there may be
388 value in having a referee. An objective and impartial third party who can set and enforce the
389 rules of the game explicitly to engineer behavioral outcomes may turn out to be a very important
390 market participant. This would be particularly true if we are ever to make the Site Ds of the
391 world – deprived neighbourhoods, complex but environmentally sustainable sites - locations
392 where developers might rationally choose to invest. Conceiving of planning in this way suggests
393 an alternative form of urban and environmental regulation that will entail a fuller dialogue with
394 behavioral economics and 'mechanism design' (for example, Börgers, 2015). These schools of
395 thought have had a profound effect on other aspects of public policy (for example, Halpern,
396 2015; Loewenstein, 2015; Madrian, 2014). Taking a cue from this literature and thinking again

about beliefs, values and the epistemic underpinnings of how we animate the markets that produce the built environment may help us arrive at a clearer view regarding the role and value of planning in these markets.

Appendix

Consider a game of incomplete information where Mark and Cecilia independently and simultaneously choose a development site from the set {A, B, C, D}. If their choices coincide, they both obtain a payoff of 0. It is known to both players that Mark's payoffs when choosing A, B, C, D alone are 4, 3, 2, and 1, respectively. However, *ex ante* there are two possibilities for Cecilia's payoffs. With probability 0.6, Cecilia has the same payoffs as Mark's. With probability 0.4, Cecilia's payoffs when choosing A, B, C, D alone are 3, 4, 2, and 1, respectively. Note that Cecilia prefers site B the most in this case. Note also that Cecilia's payoffs, or in game theoretical terms types, are Cecilia's private information while Mark only knows the prior distribution of Cecilia's types. The following figure summarizes the game. Intuitively, Cecilia knows which bi-matrix is being played while Mark only knows that the left (type 1 of Cecilia) is being played with probability 0.6 and the right (type 2 of Cecilia) 0.4.

Cecilia

Mark	A	B	C	D
A	0, 0	4, 3	4, 2	4, 1
B	3, 4	0, 0	3, 2	3, 1
C	2, 4	2, 3	0, 0	2, 1
D	1, 4	1, 3	1, 2	0, 0

Type 1 Cecilia, probability 0.6

Cecilia

Mark	A	B	C	D
A	0, 0	4, 4	4, 2	4, 1
B	3, 3	0, 0	3, 2	3, 1
C	2, 3	2, 4	0, 0	2, 1
D	1, 3	1, 4	1, 2	0, 0

Type 2 Cecilia, probability 0.4

Figure 1: The first payoff in each cell is for Mark and the second is for Cecilia

We now claim that the strategy profile {C, (A,B)} constitutes a Bayesian Nash equilibrium in this game in which Mark chooses C, and type 1 of Cecilia chooses A and type 2 chooses B. To see this, note that given Mark's strategy of choosing C, type 1 of Cecilia indeed maximises her payoff by selecting A which yields her the highest payoff of 4. On the other hand, type 2 of Cecilia obtains the highest payoff of 4 by selecting B.

We now show that given Cecilia's strategy which specifies A and B for type 1 and 2 respectively Mark finds it optimal to choose C. For Mark, with probability 0.6 the left bi-matrix is being played where according to Cecilia's strategy A is chosen, and with probability 0.4 the right bi-matrix is being played where Cecilia selects B. In expected terms, choosing A yields Mark 0.6*0 + 0.4*4 = 1.6. Similarly, choosing B yields 0.6*3 + 0.4*0 = 1.8. Finally, selecting C yields 0.6*2 + 0.4*2 = 2 and selecting D yields 0.6*1 + 0.4*1 = 1. Thus, Mark indeed maximizes his expected payoff by selecting C given Cecilia's equilibrium strategy.

In conclusion, Mark's belief of Cecilia choosing A with probability 0.6 and B with probability 0.4 is consistent with Cecilia's best response to Mark's choice of C. And Mark choosing C is rational given his belief about Cecilia's type.

References

Adams D and Watkins C (2014) *The Value of Planning*. RTPI Research Report no. 5, June 2014. London: RTPI. Available at: http://www.rtpi.org.uk/media/1024627/rtpi_research_report_value_of_planning_full_report_june_2014.pdf accessed 27th November 2017

Adams D and Tiesdell S (2010) Planners as market actors: rethinking state-market relations in land and property. *Planning Theory and Practice*, 11 (2): 187-207.

Alexander E R (1992) A transaction cost theory of planning. *Journal of the American Planning Association*, 58 (2): 190-200.

Alexander E R (2001) A transaction cost theory of land use planning and development control: towards the institutional analysis of public planning. *Town Planning Review*, 72 (1), 45-75.

Avramides A (2001) *Other Minds*. London: Routledge.

Baddeley, M. 2013 Herding, social influence and expert opinion. *Journal of Economic Methodology*. 20 (1): 352-44.

Baptista R, Farmer J D, Hinterschweiger M, Low K, Tang D and Uluc, A. (2016) *Macroprudential Policy in an Agent-based Model of the Housing Market*. BoE report No. 619. London: Bank of England

Batty M (2005) *Cities and Complexity: Understanding Cities through cellular automata, Agent-Based Models and fractals*. Cambridge, MA: The MIT Press.

Benz A, Jäger G and van Rooij R (2016) *Game theory and pragmatics*. Basingstoke: Palgrave.

Bina O (2013) The green economy and sustainable development: An uneasy balance? *Environment and Planning C: Government and Policy* 31: 1023–1047

Bond A, Pope J, Morrison-Saunders A and Retief F (2016) A game theory perspective on environmental assessment: what games are played and what does this tell us about decision making rationality and legitimacy. *Environmental Impact Assessment Review*, 57: 187-194.

Börgers T (2015) *An introduction to the theory of mechanism design*. Oxford: Oxford University Press.

Brenner N and Theodore N (2005) Neoliberalism and the Urban Condition. *City*, 9: 101–107.

474

475 Brotchie J F, Sharpe R and Toakley, A R (1973) Econometric model to aid in urban planning
476 decisions. *Journal of Urban Planning and Development*, 99 (1), 25-46.

477

478 Brown P H (2015) *How Real Estate Developers Think. Design, Profits and Community*.
479 Philadelphia, PA: University of Pennsylvania Press.

480

481

482

483 Bulan L, Mayer C, Tsuriel Somerville C (2009) Irreversible investment, real options, and
484 competition: Evidence from Real Estate Development. *Journal of Urban Economics*, 65 (3): 237-
485 251.

486

487

488 Campbell H, Tait, M and Watkins C (2014) Is there space for better planning in a Neoliberal
489 World? Implication for Planning Practice and Theory. *Journal of Planning Education and*
490 *Research*, 34 1: 45-59.

491

492 Chadwick, G (2013) *A systems view of planning: towards a theory of the urban and regional planning*
493 *process*. Oxford: Pergamon Press.

494

495 Cheshire P and Sheppard S (2005) The introduction of price signals into land use planning
496 decision making: a proposal. *Urban Studies* 42: 647-63.

Cole D H, Epstein G and McGinnis M D (2014) Digging deeper into Hardin's pasture: the complex institutional structure of 'the tragedy of the commons'. *Journal of Institutional Economics,* 10: 353-369.

Evans A W (1991) Rabbit hutches on postage stamps: planning, development and political economy. *Urban Studies*, 28: 853-870.

Farías, I and Bender, T. (2010) *Urban assemblages. How actor-network theory changes urban studies*. Abingdon: Routledge.

Feeny D, Berkes F, McCay B J and Acheson J M (1990) The Tragedy of the Commons: Twenty-Two years later. *Human Ecology*, 18 (1): 1-19.

Ferrari A, Henneberry J, Laughlin D L, Tait M, Watkins C and McMaster R (2011) *Behavioral Change Approach and the Housing Sector: Scoping Study*. London: DCLG.

Fischer S (1977) Long term contracting, sticky prices, and monetary policy. *Journal of Monetary Economics*, 3: 317–23.

Fisher M and Gilbert J (2013) Capitalist realism and neoliberal hegemony: a dialogue. *New Formations: a journal of culture theory and politics*, 80 (81): 89-101.

520

521 Georgeson L, Caprotti F and Bailey I (2014) 'It's all a question of business': Investment
522 identities, networks and decision-making in the cleantech economy. *Geografiska Annaler, Series*
523 *B, Human Geography*, 96 (3): 217–229

524

525 Gibbs D and O'Neil K (2014) Rethinking sociotechnical transitions and green
526 entrepreneurship: the potential for transformative change in the green building sector.
527 *Environment and Planning A*, 46 (5), 1088-1107.

528

529 Gibbs D and O'Neill, K (2015) Building a green economy? Sustainability transitions in the
530 UK building sector. *Geoforum* 59: 133–141

531

532

533 Gilroy S P and Hantula D A (2016) Inherently irrational? A computational model of
534 escalation of commitment as Bayesian updating. *Behavioral Processes* 127: 43-51.

535

536 Gómez-Antonio M and Hortas-Rico M (2016) The Causes of Urban Sprawl in Spanish
537 Urban Areas: A Spatial Approach. *Spatial Economic Analysis*, 11 (2): 219-247.

538

539 Gunder M (2016) Planning's "Failure" to Ensure Efficient Market Delivery: A Lacanian
540 Deconstruction of this Neoliberal Scapegoating Fantasy. *European Planning Studies*: 24(1), 21-
541 38.

542

543 Gunn S and Hillier J (2012) Processes of Innovation: Reformation of the English Strategic
544 Spatial Planning System. *Planning Theory and Practice* 13 (3): 359–81.
545
546 Gunther-McGrath R (2013) *The end of competitive advantage*. Boston, MA: Harvard Business
547 Review Press.
548
549 Halpern D (2015) *Inside the Nudge Unit. How small changes can make a big difference*. London: W
550 H Allen.
551
552 Hardin G (1968) The Tragedy of the Commons. *Science*, 162 (3859): 1243-1248.
553
554 Hillier, J. de Roo, G. and van Wezemael, J. (2016) *Complexity and Planning: systems, assemblages*
555 *and simulations*. Abingdon: Routledge.
556
557 Hrelja R (2011) The Tyranny of Small Decisions. Unsustainable Cities and Local Day-to-Day
558 Transport Planning. *Planning Theory and Practice*, 12 (4): 511–524.
559
560 Holman, N., Mossa, A. and Pani, E. (2017) Planning value(s) and the market: an analytic for
561 'what comes next'. *Environment and Planning A*. Epub ahead of print, December 29th 2017
562 https://doi.org/10.1177/0308518X17749730.
563
564 Jackson C and Watkins C (2008) *Retail property investment behavior and planning policy*. London:
565 Investment Property Forum.

566

567 Jiang L, Deng X and Seto K C (2013) The impact of urban expansion on agricultural land
568 use intensity in China. *Land Use Policy*: 35, 33-39.

569

570 Jones D S (2012) *Masters of the Universe: Hayek, Friedman and the birth of neoliberal politics*.
571 Princeton, NJ: Princeton University Press.

572

573 Kaza N and Hopkins L D (2009) In What Circumstances Should Plans Be Public? *Journal of*
574 *Planning Education and Research*, 28 (4): 491-502.

575

576 Lai L W C, Ngar Ng F W and Yung P (2008) The Coase Theorem and a Coasian
577 construction economics and management research agenda. *Construction Management and*
578 *Economics* 26 (1): 29-46.

579

580 Legacy C, Lowe M and Cole-Hawthorne R (2016) Reconstituting urban research in a
581 neoliberal planning climate. *Australian Planner*, 53 (1): 1-4.

582

583 Levy S, Martens K and van der Heijden, R. (2016) Agent-based models and self-organisation:
584 addressing common criticisms and the role of agent-based modelling in urban planning.
585 *Town Planning Review*, 87 (3): 321-338.

586

587 Loewenstein G (2015) Behavioral economics and public policy 102: beyond nudging.
588 *American Economic Review*, 105 (5): 396-401.
589

590 Lord A D and O'Brien P (2017) Putting a price on planning? Re-imagining planning as a
591 market maker. *Planning Theory and Practice,* 18 (2): 217-232.
592
593 Lord A D (2009) The Community Infrastructure Levy: an information economics approach
594 to understanding infrastructure provision under England's reformed spatial planning system.
595 *Planning Theory and Practice,* 10: 333-349.
596
597 Lord A D (2012) *The Planning Game: an Information Economics Approach to Understanding Urban*
598 *and Environmental Management*. Oxford: Routledge.
599
600 Lovering J (2009) The Recession and the End of Planning as We Have Known It.
601 *International Planning Studies,* 14: 1 1–6.
602
603 MacCullum D and Hopkins D (2011) The Changing Discourse of City Plans: Rationalities of
604 Planning in Perth, 1955-2010. *Planning Theory and Practice* 12 (4): 485–510.
605
606 Madrian B C (2014) Applying insights from behavioral economics to policy design. *Annual*
607 *Review of Economics*, 6 (1), 663-688.
608
609 Mäntysalo R and Saglie I (2010) Private Influence Preceding Public Involvement: Strategies
610 for Legitimizing Preliminary Partnership Arrangements in Urban Housing Planning in
611 Norway and Finland. *Planning Theory and Practice,* 11 (3): 317–38.
612
613 Marom N and Carmon N (2015) Affordable housing plans in London and New York:
614 between market place and social mix. *Housing Studies,* 30 (7): 993-1015.
615

Nathan, M. and Overman, H. (2011) *What we know (and don't know) about the links between planning and economic performance*, Policy Paper 10, Spatial Economics Research Centre, LSE. Available at: http://www.spatialeconomics.ac.uk/textonly/SERC/publications/download/sercpp010.pdf (accessed 13th August 2015.)

O'Neil K and Gibbs D (2016) Rethinking green entrepreneurship – fluid narratives of the green economy. *Environment and Planning A*, 48 (9), 1727-1749.

Ostrom E (2014) Collective action and the evolution of social norms. *Journal of Natural Resources Policy Research,* 6 (4): 235-252.

Perea A (2012) *Epistemic Game Theory.* Cambridge: Cambridge University Press.

Polnaszek T J and Stephens D W (2013) Why not lie? Costs enforce honesty in an experimental signalling game. *Proceedings of the Royal Society B* 281 (1774): 1-8.

Porter M E (1979) How competitive forces shape strategy. *Harvard Business Review*, March-April 1979: 137-145.

Rasmussen E (2006) *Games and information. An introduction to game theory 3rd Edition.* London: Wiley Blackwell.

Reades J (2014). Mapping changes in the affordability of London with open-source software and open data: 1997–2012. *Regional Studies, Regional Science* 1(1): 336-338.

Roberts C and Henneberry J (2007) Exploring office investment decision-making in different European contexts. *Journal of Property Investment & Finance,* 25 (3): 289-305.

Ryle G (1949) *The Concept of Mind*. London: Hutchinson's University Library.

Samsura D A A, Van der Krabben E and Van Deemen A M A (2010) A game theory approach to the analysis of land and property development processes. *Land Use Policy,* 27: 564-578.

Samsura D A A, Van der Krabben E, Van Deemen A M A and Van der Heijden R E C M, (2015) Negotiation processes in land and property development: an experimental study. *Journal of Property Research*, 32, 173-191.

Webster C (2005) The New Institutional Economics and the evolution of modern urban planning: insights, issues and lessons. *Town Planning Review*, 76 (4), 455-502.

While A, Jonas A E and Gibbs, D (2004) The environment and the entrepreneurial city: Searching for the urban 'sustainability fix' in Manchester and Leeds. *International Journal of Urban and Regional Research*, 28(3): 549–569.

Wigger A and Buch-Hansen H (2012) The unfolding contradictions of neoliberal competition regulation and the global economic crisis: a missed opportunity for change? In H. Overbeek (Ed.) *Neoliberalism in Crisis*, pp. 23-43.

Wigger A and Buch-Hansen H (2013) Competition, the global crisis and alternatives to neoliberal capitalism: a critical engagement with Anarchism. *New Political Science*, 35 (4): 604-626.

Xu J and Yeh A G O (2005) City repositioning and competitiveness building in regional development: new development strategies in Guangzhou, China. *International Journal of Urban and Regional Research,* 29 (2): 283-308.

Yigitcanlar, T. & Teriman, S. (2015) Rethinking sustainable urban development: towards an integrated planning and development process. *International Journal of Environmental Science and Technology*, 12 (1), 341–352.